

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application:

**Listing of Claims:**

Claims 54 - 110 (cancelled)

111. (New) A semiconductor structure comprising:  
a substrate including an insulator layer; and  
a device layer disposed over the insulator layer, the device layer comprising at least one of strained Si, strained  $\text{Si}_{1-w}\text{Ge}_w$ , strained Ge, GaAs, AlAs, ZnSe, and InGaP.
112. (New) The structure of claim 111 wherein a surface of the structure has a root mean square surface roughness of less than about 11 nanometers.
113. (New) The structure of claim 111, further comprising:  
a device integrated into at least a portion of the device layer.
114. (New) The semiconductor structure of claim 111, wherein the substrate comprises silicon.
115. (New) A semiconductor structure comprising:  
a substrate comprising silicon;  
an insulating layer disposed over the substrate; and  
a relaxed  $\text{Si}_{1-y}\text{Ge}_y$  layer disposed over the insulating layer.
116. (New) The structure of claim 115 wherein a Ge concentration  $y$  of the relaxed layer is selected from the range of zero to 1.

117. (New) The structure of claim 116 wherein the Ge concentration  $y$  has a value of 1.
118. (New) The structure of claim 115, further comprising:  
a device disposed within at least a portion of the relaxed  $\text{Si}_{1-y}\text{Ge}_y$  layer.